



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/586,598

07/20/2006

Tadashi Maeda

2006_1151A

1659

513 7590 05/07/2009
WENDEROTH, LIND & PONACK, L.L.P.
1030 15th Street, N.W.,
Suite 400 East
Washington, DC 20005-1503

EXAMINER

MEHTA, MEGHA S

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

05/07/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/586,598

Applicant(s)

MAEDA ET AL.

Examiner

MEGHA MEHTA

Art Unit

1793

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-38 is/are pending in the application.
- 4a) Of the above claim(s) 16-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 27-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,189,771 Maeda et al in view of US 2002/0185309 Imamura et al.

Regarding claims 27 and 33, Maeda teaches a soldering process with which a first electrode having a solder portion thereon is soldered to a second electrode, wherein the process comprises, a first step of supplying a flux at least one of the solder portion and the second electrode, a second step of aligning the first electrode with the second electrode so as to locate the flux between the solder portion and the second electrode, a third step of heating so as to melt the solder portion, so that a molten solder material from the solder portion comes in contact with the second electrode (column 4, lines 1-8, column 5, lines 15-29 and 32-35). Maeda does not explicitly teach the fourth step of solidifying the molten solder material after the third step. However, this would have been obvious to one of ordinary skill in the art at the time of the invention because the purpose of solder is to adhere two pieces together and a liquid solder would not suffice.

Maeda additionally does not teach the flux compositions. Imamura teaches a method of mounting an electronic component with solder bumps to a substrate by using a flux that comprises a liquid base material comprising a resin component which is dissolved in a solvent,

an active component which removes an oxide, and a metal powder of which constituting elements are comprised of cores and coatings around the cores, the coatings are made of a metal of which melting point is higher than that of a solder material which forms the solder portion, wherein the metal powder is in the form of thin pieces, and the flux contains the metal powder in an amount in the range between 1% and 9% by volume based on a volume of the flux (paragraphs [0064]-[0066] and [0078]). It would have been obvious to one of ordinary skill in the art to include the flux of Imamura in the method of Maeda because one may vary the flux composition based on the desired final result and the effect of the flux on the product being made.

Regarding claims 28 and 34, Maeda teaches the solder portion is a bump which is formed on the first electrode (column 5, lines 15-22).

Regarding claims 29 and 35, Maeda teaches that the first electrode is an external connection electrode of an electronic part (column 5, lines 15-22).

Regarding claims 30 and 36, Maeda teaches that the second electrode is an electrode of a circuit formed on a substrate.

Regarding claims 31 and 37, Maeda teaches supplying the flux carried out in a flux application step wherein a film of the flux is formed, and then a lower end portion of the solder portion is made in contact with the film (column 4, line 58 – column 5, line 1 and figure 4A).

Regarding claims 32 and 38, Maeda teaches the soldering process but does not explicitly teach a cooling step. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to solidify the molten solder material through a cooling step wherein the

molten solder material is cooled because cooling and thus solidifying the solder is the only way for the solder to hold two pieces together.

Response to Arguments

3. Applicant's arguments filed March 4, 2009, have been fully considered but they are not persuasive. Applicant argues that neither Imamura nor Maeda teaches metal powder either in thin pieces or in cores and coatings. However, "thin" is a relative term and particles in a flux may be referred to as thin. Additionally, Maeda's grains have cores and coatings around the cores, where the cores and the coatings are made of the same material. For these reasons, all previous rejections have been maintained.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MEGHA MEHTA whose telephone number is (571)270-3598. The examiner can normally be reached on Monday to Friday 7:30 am to 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on 571-272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Megha Mehta/
Examiner, Art Unit 1793

/Kevin P. Kerns/
Primary Examiner, Art Unit 1793